

Homework 3

CMSY-199, Fall 2013

Upload your solution to the Canvas course website as a zip archive file prior to the start of class on Monday, October 14.

1. Write a Java application called **Blackjack** which uses the **Card** (Fig. 7.9) and **DeckOfCards** (Fig. 7.10) classes to create a deck of cards, shuffle the deck, and deal blackjack hands to a single player and the dealer. Add the methods **getFace** and **getSuit** to the **Card** class.
2. Write a class called **Hand** which encapsulates the attributes and operations of a blackjack hand including the methods **toString** to return a **String** representation of the hand and **getValue** to return the value of the hand as an **int**. The **Hand** class should have an instance variable which is an **ArrayList<Card>** to store the cards dealt to the hand.
3. Implement a simplified blackjack game in which:
 - (a) The player and dealer are initially dealt two cards with the dealer's second card dealt face down.
 - (b) The player is then allowed to *hit* (take an additional card) or *stand* (take no more additional cards).
 - (c) The player may *hit* as long as the value of his hand is less than 21.
 - (d) The dealer must *hit* as long as the value of his hand is less than 17 - including a *soft* 17.
 - (e) The winning hand is the one whose value is closest to 21 without going over.
 - (f) If a player's hand value exceeds 21, the player has gone *bust* and loses immediately.
 - (g) If the values of the player's hand and dealer's hand are identical at the end of the game, the result is a *push* and there is no winner.
4. Modify the **Blackjack** application to play one million games of blackjack and count the number of wins, losses, and pushes using the variables **winCount**, **loseCount**, and **pushCount**, respectively.
5. If you are not familiar with the game of Blackjack, please visit <http://wizardofodds.com/games/blackjack> for a brief description of the rules and a [link to play](#) an online version of the game for free.

